

Effect of mandibular plane changes on angular measurements in Cone Beam Computed Tomography

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*Abstract

Background: One of the most common errors in medical and dental imaging procedure is deviation from the standard position. Studies have shown that wrong positioning of the mandible during imaging by medical CT scan, can negatively affect the accuracy of linear measurements.

Objectives: The aim of this study was to determine the effect of changes in angle of head on angular measurements obtained from Cone Beam Computed Tomography (CBCT) images of dried human skull.

Methods: This analytical study was conducted in the School of Dentistry in Qazvin, 2011. Gutta percha markers were attached to three human skulls. The actual angles were recorded using the PLANMECA PROMAX VIEWER software. CBCT images were obtained in three positions: standard, 11 and 22 degrees axial deviation. Data were analyzed using T-test, ANOVA and Tukey.

Findings: There were no significant differences between measurements obtained from CBCT in all three planes and direct measurements. There were no significant differences among the results of measurements in predetermined angles after changing the angle of dried skull in axial plane. There were no significant differences between direct measurements and CBCT measurements in separate analysis of determined angles in maxillae and mandible.

Conclusion: With regards to the results, it seems that possible axial changes in head position have no effect on angular measurements in CBCT imaging and CBCT is reliable in angular measurements.

Keywords: Cone-Beam Computed Tomography, Reproducibility of Results, Mandible

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